



ENGINEERING MAINTENANCE BRANCH BULLETIN

Issue # 001

May 2005

This is the first of what will be a monthly bulletin to MSC ships and shoreside personnel. The purpose of the bulletin is to inform all concerned of current COMSC Preventive Maintenance management practices associated with any new or revised policy and procedures, along with helpful tips & tricks for improved maintenance. The bulletin will also discuss and present any upcoming initiatives in the various programs.

The principals in the Engineering Maintenance Branch are:

Branch Chief – Randy Torfin (202) 685-5744

(Randel.Torfin@navy.mil)

Sr. Mechanical Engineer – Will Carroll (202) 685-5742

(William.S.Carroll@navy.mil)

Sr. Mechanical Engineer – Norm Wolf (202) 685-5778

(norman.wolf@navy.mil)

Mechanical Engineer – Liem Nguyen (202) 685-5969

(liem.nguyen@navy.mil)

Mechanical Engineer – Andrew Shaw (202) 685-5721

(andrew.e.shaw@navy.mil)

Electrical Engineer – David Greer (202) 685-5738

(David.Greer1@navy.mil)

The Articles in this Bulletin are as follows:

- *SAMM Tips*
- *Alignment – “Beware the Heel & Toe Effect”*
- *Question of the Month – Thermography Limits in Electrical Connections*
- *CMEO Training – Come & Get It!*
- *We Want You!*



SAMM Tips

Load SAMM CMS32 module quicker. To load the CMS module quicker:

- 1) Set the filter to show only recent results (i.e. show only previous years results).
- 2) Click the filter button on the menu bar at the top of the screen.
- 3) Select '>' under “Test Date Is” and select an appropriate data (i.e. Jan 1 05).

Extend the life of your LogBook PDA battery: For units with conventional disposable batteries, leave unit out of the cradle. This will prolong the life of the batteries in the unit.

-Reader Tips provided by Seaworthy Systems Incorporated (SSI)



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Beware the Heel & Toe Effect!

(Taken with permission from the E-Presentation by Alan Ludeking, www.ludeca.com)

What is it?

The “Heel & Toe” Effect is something to look out for when shimming a machine to align one component to another (e.g. A motor to its pump). It results from misalignment of the machine relative to its own base. It produces an angled contact between the underside of the foot and its support surface or base. The condition results in machine frame distortion upon tightening the anchor bolts, just like what happens with a “bent foot” soft foot.

Therefore, you must not only think about aligning the machines to each other, but also the alignment of the machines with respect to their own support surfaces. Proper initial installation and leveling of the Stationary Machine will prevent this effect from happening to your machine to be moved.

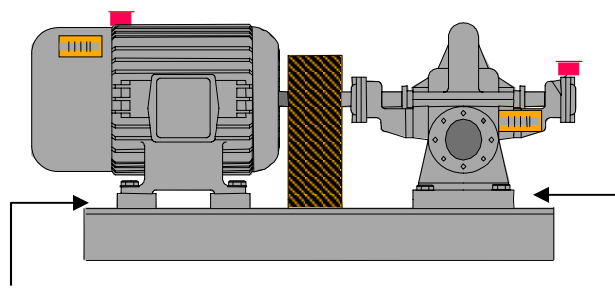
Consequences

Suppose you are installing a machine - the distance between the front and back feet is 10” and the feet are 4” square. To align the machines you must shim the front feet 30 mils and the back feet 5 mils. In so doing, you will notice that the contact point between the feet and shims has been shifted to the back of the feet. This means you have shifted the contact point backwards by 2”. As a result, the machine will end up too high by five mils! Why??

The difference in shimming required was 25 mils: (30-5). The distance between the feet is 10”. Hence, the angle you are creating between feet and base is 2.5 mils per inch:

(25 mils/10”). Since the foot is 4” square, you are shifting the shim plane backwards 2”, from the middle of the foot to the back edge. At 2.5 mils/inch, this means you just overshimmed the machine by five mils (2.5 mils x 2)! Do not be surprised then, that accurate shim changes result in an unhappy alignment when you take your next set of readings.

After the next set of corrections, you may achieve your alignment. But then, when you tighten the feet, you will distort the machine frame, which not only changes the alignment but also deflects the shaft and loads the bearings.



The only solution: align them level!

The only solution to this “Heel & Toe” problem is to properly level your machines to their bases and align them as evenly as possible.

By the way, when somebody tries to fix a horizontal bolt-bound problem by shimming one side of the machine more than the other, in order to shift the shaft sideways, you also cause a “heel & toe” effect, but in the side-to-side direction! Thus, this “trick” is a no-no!



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Question of the Month: Thermography Limits in Electrical Connections

(reproduced with permission from H. Penrose, PhD, T Solutions, Inc. (howard@motordoc.net))

What are the real-world pass/fail limits of electrical connections using Infrared Thermography?

The 'Guideline for Infrared Inspection of Electrical and Mechanical Systems,' published by the Infraspction Institute:

The following are determined as the difference between the spot temperature and the ambient temperature.

- 0-10C: Corrective Actions during next maintenance cycle;
- 10-20C: Corrective Action required as scheduling permits;
- 20-40C: Corrective Action required ASAP;
- 40C +: Corrective Action required immediately.

Another specification, MIL-STD-2194, calls for the following limits:

- 10-25C: Component failure unlikely, but corrective measures required during next routine maintenance period;
- 25-40C: Component failure probable
- 40-70C: Component failure certain
- 70C +: Component failure imminent. Stop survey and correct.

COMING UP – NEXT MONTH!

Vibration Monitoring Status Report

New Monthly SAMM/Maintenance Tips

Another Question of the Month

CMEO Training – Come & Get It!

CMEO (Civilian Marine Engineering Officer) is a two-week training course (held quarterly) at the Naval Supply Corps School in Athens, GA. It is for both shipboard and shoreside engineers. The N7 Directorate of the Military Sealift Command hosts the course and encourages all MSC engineers to attend (Note: MSC shipboard engineers are given priority when classes are full).

CMEO provides training on an array of topics such as: SAMM (MALIN, Logbook, etc.), Vibration Monitoring, Lube Oil, Fuel Oil (NEURS), Chemicals (boiler treatment, sewage treatment, etc.), Supply (COSAL, ShipCLIP), Environmental, and Safety. SAMM is interactively taught using actual data and each module is discussed extensively.

Upcoming class dates:

- July 11-22, 2005
- December 05-16, 2005

For further information and to sign up, please go to the CMEO website (<http://63.219.124.12/cmeoclasssignup/cmeo.htm>), or contact Dave Greer (david.greer1@navy.mil) with any questions.



WE WANT YOU... to provide FEEDBACK!

Feedback is *ESSENTIAL* to making this a helpful bulletin to all shipboard personnel in doing your job "smarter not harder". What we don't want is to give you more junk mail. If there's a SAMM or maintenance tip, topic, question, suggestion, or comment on how to make this useful, or something relating to Engineering Maintenance you think should get out to the ships, please pass it on. We want this to be YOUR Maintenance Management Bulletin. Send your submission to Randy Torfin (randel.torfin@navy.mil)